WHAT IS CLAIMED IS:

1. A method, comprising:

generating first and second optical signals;

amplitude modulating an incoming data signal onto the first optical signal to generate a data optical signal;

amplitude modulating a frequency comb having equal channel spacing onto the second optical signal to generate a plurality of local oscillator optical signals;

passing the data optical signal through an optical waveguide optically coupled to each of N first optical resonators, each first optical resonator having a different predetermined resonant frequency corresponding to a different predetermined channel of the frequency comb to remove that channel from the data optical signal;

passing the local oscillator optical signals through an optical waveguide optically coupled to each of N second optical resonators, each second optical resonator having a resonant frequency substantially equal to the resonant frequency of a corresponding first optical resonator to remove the corresponding local oscillator optical signal; and

summing the channel and local oscillator optical signal removed by each corresponding pair of first and second optical resonators having equal resonant frequencies in a

preselected one of N photodetectors to generate N sub-band data signals.

2. The method of claim 1, wherein the sum of the N sub-band data signals comprises the incoming data signal.

3. The method of claim 1, wherein each optical resonator comprises a microresonator.

4. The method of claim 3, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

5. The method of claim 1, wherein amplitude modulating the incoming data signal comprises:

amplitude modulating the incoming data signal in a Mach-Zehnder interferometric modulator.

6. The method of claim 1, wherein generating the first and second optical signals comprises:

generating an optical signal; and

splitting the optical signal into identical first and second optical signals.

7. The method of claim 6, wherein the sum of the N sub-band data signals comprises the incoming data signal.

8. The method of claim 6, wherein each optical resonator comprises a microresonator.

9. The method of claim 8, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

10. The method of claim 6, wherein amplitude modulating the incoming data signal comprises:

amplitude modulating the incoming data signal in a dual-output port Mach-Zehnder interferometric modulator.

11. The method of claim 1, wherein generating the first and second optical signals comprises:

generating an optical signal; and

amplitude modulating the incoming data signal onto the optical signal in a dual output interferometric modulator to generate the data optical signal as one output and to generate the second optical signal as the other output.

12. The method of claim 11, wherein generating the second optical signal further comprises:

passing the second optical signal through an optical waveguide optically coupled to an optical resonator having a resonant frequency equal to the carrier frequency of the generated optical signal to extract the second optical signal and reject any harmonic frequencies.

13. The method of claim 12, wherein the sum of the N sub-band data signals comprises the incoming data signal.

14. The method of claim 12, wherein each optical resonator comprises a microresonator.

16. The method of claim 14, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

17. The method of claim 12, wherein amplitude modulating the incoming data signal comprises:

amplitude modulating the incoming data signal in a dual-output port Mach-Zehnder interferometric modulator.

18. A system, comprising:

an optical source for generating first and second optical signals;

a first modulator for amplitude modulating an incoming data signal onto the first optical signal to generate a data optical signal;

a second modulator for amplitude modulating a frequency comb having equal channel spacing onto the second optical signal to generate a plurality of local oscillator optical signals;

a first optical waveguide for passing the data optical signal therethrough;

N first optical resonators optically coupled to the first optical waveguide, each first optical resonator having a different predetermined resonant frequency corresponding to a different predetermined channel of the frequency comb to remove that channel from the data optical signal passing through the first optical waveguide;

a second optical waveguide for passing the local oscillator optical signals therethrough;

N second optical resonators optically coupled to the second optical waveguide, each second optical resonator having a resonant frequency substantially equal to the resonant frequency of a corresponding first optical resonator to remove the corresponding local oscillator optical signal

from the local oscillator optical signals passing through the second optical waveguide; and

N photodetectors, each photodetector configured for summing the channel and local oscillator optical signal removed by each corresponding pair of first and second optical resonators having equal resonant frequencies to generate N sub-band data signals.

19. The system of claim 18, wherein the sum of the N sub-band data signals comprises the incoming data signal.

20. The system of claim 18, wherein each optical resonator comprises a microresonator.

21. The system of claim 20, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

22. The system of claim 18, wherein at least one of the first and second modulators comprises:

a Mach-Zehnder interferometric modulator.

23. The system of claim 18, wherein the optical source comprises:

an optical generator for generating an optical signal; and

an optical splitter for splitting the optical signal into identical first and second optical signals.

24. The system of claim 23, wherein the sum of the N sub-band data signals comprises the incoming data signal.

25. The system of claim 23, wherein each optical resonator comprises a microresonator.

26. The system of claim 25, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

27. The system of claim 23, wherein at least one of the first and second modulators comprises:

a Mach-Zehnder interferometric modulator.

28. The system of claim 18, wherein the optical source generates an optical signal having a predetermined carrier frequency and the first modulator comprises:

a dual output interferometric modulator to generate the data optical signal as one output and to generate the second optical signal as the other output.

29. The system of claim 28, further comprising:

a third optical waveguide for passing the second optical signal therethrough; and

an optical resonator having a resonant frequency equal to the carrier frequency of the generated optical signal and optically coupled to the third optical waveguide to extract the second optical signal and reject any harmonic frequencies.

30. The system of claim 29, wherein the sum of the N sub-band data signals comprises the incoming data signal.

31. The system of claim 29, wherein each optical resonator comprises a microresonator.

32. The system of claim 31, wherein each microresonator is selected from the group consisting of microsphere resonators and microdisk resonators.

33. The system of claim 22, wherein the first modulator comprises:

a dual-output port Mach-Zehnder interferometric modulator.